PERMIT APPLICATION REVIEW
COVERED SOURCE PERMIT (CSP) NO. 0080-01-C
Application Renewal No. 0080-05

Applicant: Chevron Products Company (Port Allen Marketing Terminal)

Located at: 260 Aka'ula Road (A & B Road), Eleele, Kauai

Mailing Address: 91-480 Malakole Street
Kapolei, Hawaii 96707

Responsible Official: Mr. Gary Cushnie
Title: Marketing Operations Manager
Phone: (808) 682-3106

Contact: Mr. Richard Rosen
Title: Environmental Compliance Specialist
Phone: (808) 682-3125
Cell: (808) 478-6450
Fax: (808) 682-2214

Contact: Mr. Paul Liang
Title: Terminal Manager
Phone: (808) 961-2563, Ext. 25
Cell: (808) 864-1839
Fax: (877) 520-7265

1. Background

1.1 Chevron Products Company has applied for a renewal to their covered source permit for the Port Allen Marketing Terminal. The terminal consists of tanks and one bottom loading load rack. The load rack is equipped with a vapor combustion system to reduce volatile organic compound VOC emissions. Permitted tanks at the facility include Tank Nos. 1, 2, and 4 which are equipped with internal floating roofs to control VOC emissions. The internal floating roofs for Tank Nos. 1 and 2 are equipped with Allentech Flex-A-Span primary mechanical shoe seals. Internal floating roof for Tank No. 4 has a mechanical shoe primary seal and secondary seal. Port Allen Marketing terminal receives product by barge from Honolulu Terminal Marine (HTM). Products distributed at Port Allen Marketing terminal include motor gasoline, naphtha (whole straight run gasoline), jet fuel, and diesel. The standard industrial classification code for this facility is 5171 (Petroleum Bulk Stations and Terminals).

1.2 Permit application No. 0080-05 stated that Port Allen Marketing Terminal has two load racks; however, conversation with Mr. Rosen on February 17, 2004 to clarify information disclosed the terminal to have one load rack.

1.3 Telephone conversation with John Zink personnel (800-421-9242) verified the model no. ZCT-2-8-35-X-2/8-X-X vapor combustion system to have a 4,800 gallon per minute capacity, an 8 foot diameter x 35 foot high stack, and two (2) 8 inch burners.

1.4 A site inspection of the Port Allen terminal on March 2, 2004 [see Enclosure (1)] disclosed the following:

a. Tanks at the terminal are equipped with alarms to prevent tank overfill. If liquid level in the tank exceeds the safe operating level (SOH) to a height designated level alarm high (LAH), an alarm will sound. If liquid level goes above the LAH level to level alarm high high level (LAHH), another alarm will sound and valves will automatically close to prevent volatile organic liquid (VOL) from entering the tank. Above the LAHH level, the tanks have vents around the circumference to allow VOL to spill out of tank.

b. The load rack is equipped with a scully system for tank truck loading operations to activate the vapor combustion system. The vapor combustion system is purged for 30 seconds before vapors are ignited at the base of the system's stack.

c. The load rack has nine product load arms [one load arm is blanked off and not in use, one load arm for Jet A fuel (black), one load arm for high sulfur diesel (yellow), one load arm for low sulfur diesel (yellow), two load arms for naphtha (light gray), one load arm for supreme unleaded gasoline (red), one load arm for plus unleaded gasoline (blue), and one load arm for regular unleaded gasoline (white)].

d. The vapor combustion system has one burner to ignite vapors from tank truck loading. Another burner can be installed if Chevron decides to increase loading capacity at the terminal. The burner was observed to ignite vapors at the combustion system when loading naphtha into tank truck from one and two loading arms.

e. The tank truck at the terminal was connected to a vapor processing line to guide vapors from tank truck to vapor combustion system.

f. A propane tank at the facility supplies auxiliary fuel to the vapor combustion system for combustion of vapors.

g. The vapor combustion system is equipped with a blower to mix air with vapors/auxiliary fuel for combustion.

h. The vapor combustion system exhibited 0% opacity during its operation to process vapors from tank truck loading operations.

i. An alarm sounded and the load rack shut down during an operation to load naphtha into a tank truck. The load rack shut down due to a power interruption from the electric plant across the street from the terminal. There is no back-up generator to provide power for the terminal.

j. The Port Allen Marketing Terminal supplies the electric plant across the street with fuel oil No. 2 to generate power.

k. Some tank truck unloading operations include vapor balance. Vapors from unloading tank truck at the service station are displaced from service station tank back into tank truck. When the tank truck is loaded at the terminal, vapors from the service station tank and residual fuel vapors are treated by the vapor combustion system.

l. Tank No. 5 was empty for inspections.

m. The terminal was equipped with a magnahelic gauge, reading in inches of water, to ensure federal requirements are met for a vapor tight tank. The tank truck pressure is limited to 4,500 Pascals (450 mm water or about 18 inches water) during tank truck loading operations.

n. The 179 barrel horizontal fixed roof storage tank was designated Tank No. 22;

o. Tag on vapor combustion read serial no. VC-954547, TAG ZTOF/TC 301, WO 893899;

p. The following additional insignificant activities from those listed by the applicant were observed at the terminal:

   i. 499 gallon propane storage tank; and
   ii. 500 gallon transmix tank.

1.5 Mr. Rosen requested for the permit renewal that tank volume for the permit be designated at the LAH as follows: Tank No. 1 (30,311 barrels), Tank No. 2 (17,263 barrels), and Tank No. 4 (5,461 barrels).

2. <u>Applicable Requirements</u>

2.1 See permit application review No. 0080-01 for applicability to Hawaii Administrative Rules (HAR).

2.2 See permit application review No. 0080-04 for applicability to the federal regulations.

2.3 The following are applicable to this facility (see permit application review No. 0080-04):

a. Compliance data system;
b. Annual emissions reporting; and
c. Synthetic minor source designation.

2.4 The following do not apply to the Port Allen Marketing Terminal (see permit application review No. 0080-04):

a. Best available control technology;
b. Prevention of significant deterioration; and
c. Compliance assurance monitoring.

2.5 Consolidated emissions reporting rule (CERR) is not applicable because emissions from the facility are less than reporting levels pursuant to 40 CFR 51, Subpart A (see table

below).

Pollutant	Facility Emissions (TPY)	CERR Triggering Levels (TPY)	
		1 year cycle (type A sources)	3 year cycle (type B sources)
VOC	34.6	≥ 2,500	≥ 100
NO_x	4.0	≥ 2,500	≥ 100
CO	9.9	≥ 250	≥ 100
SO_X	2.4	≥ 2,500	≥ 1,000

3. Insignificant Activities

3.1 The following is a list of insignificant activities at the terminal. Tanks listed in (a)-(d) and (f) are exempt per HAR §11-60.1-82(f)(7-D). Tanks listed at (e) and (g) through (j) are exempt per HAR §11-60.1-82(f)(1). The oil water separator and sump listed at (k) and (l) are exempt per HAR §11-60.1-82(f)(7-D).

a. 6,174 barrel vertical fixed cone roof Tank No. 3 currently storing low sulfur diesel;
b. 3,470 barrel vertical fixed cone roof Tank No. 5 currently empty for inspection;
c. 1,557 barrel vertical fixed cone roof Tank No. 12 currently storing jet fuel;
d. 9,166 barrel vertical fixed cone roof Tank No. 14 currently storing high sulfur diesel;
e. 432 barrel vertical fixed cone roof Tank No. 16 currently storing transmix;
f. 34,312 barrel vertical fixed cone roof Tank No. 21 currently storing high sulfur diesel;
g. 179 barrel horizontal fixed roof fuel additive Tank No. 22;
h. 500 gallon transmix tank;
i. 499 gallon propane tank;
j. two (2) 400 gallon portable tote tanks;
k. 7,000 gallon concrete sump; and
l. AFL oil water separator

4. Air Pollution Controls

4.1 The bottom loading load rack is equipped with a John Zink vapor combustion system to control VOC/HAP emissions from tank truck loading. Maximum specified tank truck loading rate for the vapor combustion system is 4,800 gallons-per-minute. Minimum specified loading rate for the vapor combustion system is 150 gallons-per-minute. The burner pilot fuel is propane.

4.2 See permit application review No. 0080-03 for information on air pollution controls used at the terminal for internal floating roof tank Nos. 1, 2, and 4.

5. Project Emissions

5.1 Assumptions to determine emissions from the bottom loading load rack are the same as those stated in permit application review No. 0080-04, except for those assumptions to determine hazardous air pollutant (HAP) emissions. HAP emissions were based on vapor mass fractions for pollutants in naphtha worst case instead of gasoline. Emissions for the

loading rack are summarized below.

Bottom Loading Load Rack				
Pollutant	Vapor Mass Fraction	Emission (lb/hr)	Emission (g/s)	Emission (TPY)
VOC (see Note a)	----------	----------	----------	34.6
NO_x (see Notes b, c and d)	----------	9.620	1.215	4.0
CO (See Notes e, f, and g)	----------	24.050	3.037	9.9
SO_x (See Notes h, i, j, and k)	----------	5.813	0.734	2.4
Benzene	0.0052	----------	----------	0.180
Hexane	0.0163	----------	----------	0.563
Toluene	0.0056	----------	----------	0.194
Xylene (-m)	0.0009	----------	----------	0.031
Xylene (-o)	0.0004	----------	----------	0.014
Xylene (-p)	0.0004			0.014
			Total HAPs------->	0.996

a: (35 mg/liter)(236,520,018 gal/yr)(liter/0.264 gal)(10^{-3} g/mg)(kg/1,000 g)(2.2046 lb/kg)(ton/2,000 lb) = 34.565 ton/yr
b: (4,800 gal/min)(4 mg/liter)(liter/0.264 gal)(10^{-3} g/mg)(kg/1,000 g)(2.2046 lb/kg)(60 min/hr) = 9.620 lb/hr
c: (9.620 lb/hr)(hr/3,600 sec)(kg/2.2 lb)(1,000 g/kg) = 1.215 g/sec
d: (4 mg/liter)(236,520,018 gal/yr)(liter/0.264 gal)(10^{-3} g/mg)(kg/1,000 g)(2.2046 lb/kg)(ton/2,000 lb) = 3.950 ton/yr
e: (4,800 gal/min)(10 mg/liter)(liter/0.264 gal)(10^{-3} g/mg)(kg/1,000 g)(2.2046 lb/kg)(60 min/hr) = 24.050 lb/hr
f: (24.050 lb/hr)(hr/3,600 sec)(kg/2.2 lb)(1,000 g/kg) = 3.037 g/sec
g: (10 mg/liter)(236,520,018 gal/yr)(liter/0.264 gal)(10^{-3} g/mg)(kg/1,000 g)(2.2046 lb/kg)(ton/2,000 lb) = 9.876 ton/yr
h: 12.46(0.6)(11)(66)/536 (0.1/100) = 0.0101 lb sulfur/1,000 gal = 0.0101 (64.06/32.06) = 0.0202 lb/1,000 gal
i: (0.0202 lb/1,000 gal)(4,800 gal/min)(min/60 sec)(1,000 g/kg)(kg/2.2lb) = **0.734 g/sec**
j: (0.734 g/sec)(3,600 sec/hr)(kg/1,000 g)(2.2 lb/kg) = **5.813 lb/hr**
k: (0.0202 lb/1,000 gal)(236,520,000 gal/yr)(ton/2,000 lb) = **2.389 ton/yr**

5.2 Assumptions to determine emissions from the internal floating roof tanks are the same as those from permit application review No. 0080-04, except that vapor mass fractions for pollutants in naphtha were updated based on recent data from the permit application renewal for Honolulu Terminal Marine for determining HAP emissions. Emissions are summarized below.

Internal Floating Roof Tank Emissions							
Pollutant	Vapor Mass Fraction			Emissions (TPY)			Total Emissions (TPY)
	Tank 1 Naphtha	Tank 2 RUL	Tank 4 MUL	Tank 1 Naphtha	Tank 2 RUL	Tank 4 MUL	
VOC	--------	--------	--------	6.015	4.800	3.285	14.100
1,2,4-Trimethylbenzene	---------	--------	0.0001			0.0003	0.0003
Benzene	0.0052	0.0021	0.0018	0.0009	0.0101	0.0059	0.0185
Ethylbenzene	---------	0.0003	0.0003		0.0010	0.0010	0.0029
Hexane	0.0163	0.0074	0.0074	0.0980	0.0355	0.0243	0.1034
Toluene	0.0056	0.0064	0.0055	0.0337	0.0307	0.0181	0.0758
Xylene (-m)	0.0009	0.0010	0.0010	0.0054	0.0048	0.0033	0.0127
Xylene (-o)	0.0004	0.0004	0.0004	0.0024	0.0019	0.0013	0.0051
Xylene (-p)	0.0004	--------	--------	0.0024	--------	--------	0.0014
Total HAPs----->				0.1428	0.0840	0.0549	0.232

5.3 Assumptions to determine emissions from equipment leaks are the same as those from permit application review No. 0080-04, except that vapor mass fractions for HAP components in Naphtha were updated and used as worst case to determine total HAP emissions. Emission factors were selected from the light liquid group for valves, fittings, pump seals, and other miscellaneous leak sites. Emission estimates are summarized below as follows:

Equipment Leaks Emissions						
Pollutant		Emissions (TPY)				Total Emissions (TPY)
	Naphtha	Valves	Fittings	Pump Seals	Others	
VOC	-----	0.188	0.223	0.031	0.025	0.467
Benzene	0.0052	0.0010	0.0012	0.0002	0.0001	0.0025
Hexane	0.0163	0.0031	0.0036	0.0005	0.0004	0.0076
Toluene	0.0056	0.0011	0.0012	0.0002	0.0001	0.0026
Xylene (-m)	0.0009	0.0002	0.0002	-------	--------	0.0004
Xylene (-o)	0.0004	0.0001	0.0001	-------	--------	0.0002
Xylene (-p)	0.0004	0.0001	0.0001	-------	--------	0.0002
Total HAPs------->		0.006	0.006	0.001	0.001	0.014

5.4 Worst-case yearly emissions of VOCs and HAPs from operation of the Port Allen Marketing Terminal are shown below:

Facility-Wide Emissions				
Pollutant	Emissions (TPY)			Total Emissions (TPY)
	Bottom Loading Load Rack	Internal Floating Roof Tanks	Equipment Leaks	
VOC	34.565	14.100	0.467	49.132
NO_x	3.950	---	---	3.950
CO	9.876	---	---	9.876
SO_x	2.389	---	---	2.389
HAP	0.996	0.232	0.014	1.242

6. Air Quality Assessment

6.1 No changes to the permit are proposed for this renewal that increase emissions from the vapor combustion system. As such, an ambient air quality modeling assessment is not required.

7. Significant Permit Conditions

7.1 Update permit as applicable.

8. Conclusion and Recommendation

8.1 The bottom loading load rack is equipped with a vapor combustion system to control VOC emissions. Additional air pollution controls include internal floating roofs for the three permitted tanks at the facility that control VOCs. The total combined throughput of motor gasoline and naphtha for the terminal during calendar year 2003 was 344,627 barrels which is far below the 5,631,429 barrel throughput that emissions are based on. Recommend issuance of the permit renewal pending 30-day public comment period and 45-day review by EPA.

Mike Madsen 3-11-2004